

LTDR Data Format Descriptions (Version 3 Release)

MODIS Continuation of LTDR Products

1.1 MOD09 Surface Reflectance and NDVI Product

Naming Convention

The MODIS continuation of LTDR surface reflectance products in Version 3 release use the following naming convention:

BRDFCOR_MOD09C1.A2003339.AQUA.003.2010116213128.hdf

BRDFCOR	indicates the surface reflectance and NDVI are BRDF corrected.
MOD09	identifies the MODIS derived land surface product.
C1	indicates compositing interval C1 = daily product.
A2003339	is the year (4-digits) of the observation followed by the day within the year.
AQUA	identifies the satellite. At present the MODIS sensor is on-board two satellites: "TERRA" and "AQUA".
003	identifies the data product version.
2010116	is the year the data were processed followed by the day within the year.
213128	is the hour, minute, and second the data were processed
. .hdf	indicates the output file is in HDF4 format.

Scientific Data Sets

The processed MODIS observations are packaged into separate Scientific Data Sets (SDS) within a single HDF file. All SDS arrays are dimensioned [7200, 3600] to cover the globe at 0.05° spatial resolution in a latitude/longitude Climate Modeling Grid (CMG). The SDS arrays in the combined surface reflectance and NDVI product are:

Array Name	Description	Units	Data Type ¹	Valid Range [low,high]	Scale Factor ²	Fill Value
BRDF corrected Surface Reflectance Band 1	Surface reflectance for channel 1 (0.62–0.67 μm)	Unitless	Int16	[-0.01, 1]	10^4	-1000

Array Name	Description	Units	Data Type ¹	Valid Range [low,high]	Scale Factor ²	Fill Value
BRDF corrected Surface Reflectance Band 2	Surface reflectance for channel 2 (0.84–0.88 μm)	Unitless	Int16	[-0.01, 1]	10^4	-1000
BRDF corrected Surface Reflectance Band 7	Surface reflectance for channel 7 (2.11–2.16 μm)	Unitless	Int16	[-0.01, 1]	10^4	-1000
Internal CM-derived mask	Binary mask showing areas where no data was retrieved	NA	UInt16	[0, 1]	NA	NA
BRDF Corrected NDVI	Normalized Difference Vegetation Index	Unitless	Int16	[-0.01, 1]	10^3	-1000
Internal CM	Quality Assessment Field (see section 1.2)	Bit Field	UInt16	[0, 8191]	NA	NA
Brightness Temperature Band 31	TOA brightness temperature for channel 31 (10.78-11.28 μm)	Degrees Kelvin	UInt16	[varies]	100	0
Brightness Temperature Band 32	TOA brightness temperature for channel 31 (11.77-12.27 μm)	Degrees Kelvin	UInt16	[varies]	100	0

Notes:

1The data type int16/uint16 is a 2-byte integer/signed integer, containing 16 bits.

2The scale factor is the number the physical value is multiplied by to convert to an integer value,

thus to retrieve the physical units from the SDS values divide by the given scale factor.

1.2 Quality Assessment Field Description

All MODIS LTDR products contain a Quality Assessment (Internal CM) field or SDS. The definition of the QA

bits is the same for each product. In the following table the bits are listed from the most significant bit (MSB = bit 15) to the least significant bit (LSB = bit 0):

Bit Number	Description	Meaning
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Bit Number	Description	Meaning
15	Unused	NA
14	AOT has climatological values	1 = yes, 0 = no
13	Criteria used for aerosol retrieval	1 = criterion2, 0 = criterion1
12	Pan flag	1 = salt pan, 0 = no salt pan
10-11	Cirrus	00 = none, 01 = small, 10 = average, 11 = high
9	Pixel is adjacent to cloud	1 = yes, 0 = no
8	Cloud shadow	1 = yes, 0 = no
7	Dust	1 = yes, 0 = no
6	Sun glint	1 = yes, 0 = no
5	Fire	1 = yes, 0 = no
4	Snow	1 = yes, 0 = no
3	Low Clouds	1 = yes, 0 = no
2	High Clouds	1 = yes, 0 = no
1	Clear	1 = yes, 0 = no
0	Cloudy	1 = yes, 0 = no